

**PITYOGENES BIDENTATUS (HERBST), A EUROPEAN BARK
BEETLE NEW TO NORTH AMERICA
(COLEOPTERA: SCOLYTIDAE)**

E. RICHARD HOEBEKE

Department of Entomology, Cornell University, Ithaca, New York 14853-0999

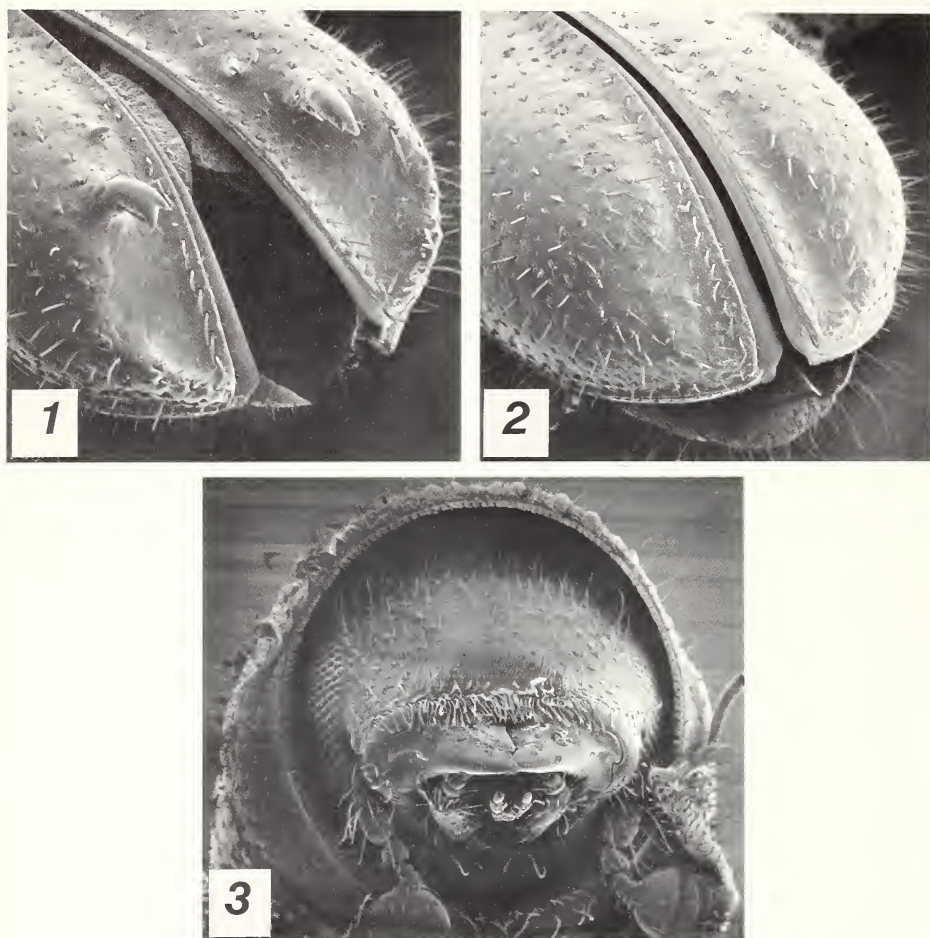
Abstract.—*Pityogenes bidentatus*, a widespread and abundant bark beetle in Europe, has been intercepted numerous times at U.S. ports of entry. It now has become established in the northeastern United States. A recent collection was made of this beetle from dying specimens of Bosnian pine, *Pinus leucodermis*, in a nursery plantation in Livingston County, New York, in April 1988. North American interception records, host plants, and habits of this bark beetle are summarized from the literature. An existing key to the North American species of *Pityogenes* is modified to include this newly detected immigrant, and scanning electron photomicrographs of diagnostic male and female structures are provided.

During a routine nursery inspection (by J. P. Filkens, Horticultural Inspector, NYS Agric. & Markets) in early April 1988, several Bosnian pines (*Pinus leucodermis* Antoine)—native to the Balkans and one of Europe's most common ornamental pines (Krüssmann, 1985)—were found dead or dying in a plantation in Lima, New York (Livingston County). The trees exhibited characteristic damage symptoms caused by bark beetles. Cut samples of these pines, with bark intact, were sent to the Insect Diagnostic Laboratory, Department of Entomology, Cornell University, for diagnosis. By June, a number of adult beetles were reared, and identified as a European bark beetle, *Pityogenes bidentatus* (Herbst), not previously reported from North America.

Because the infested Bosnian pines in the nursery plantation had been grown from seed and were a minimum of 10-15 years old (J. Filkens, pers. comm.), I am reasonably confident that the introduction of this European bark beetle into North America has not been a recent event. Inasmuch as the city of Rochester, only 33 km north of the detection site, is one of the major ports of entry in the Northeast, it is reasonable to assume that *P. bidentatus* was introduced on coniferous nursery stock at a much earlier date.

For nearly a 40-year period, from 1948-1985, specimens of *P. bidentatus* were intercepted at major U.S. ports of entry on numerous occasions. There are at least 53 interception records documented in the "List of Intercepted Plant Pests," compiled by the U.S. Department of Agriculture. Most specimens found during inspection were associated with wood (*Pinus* spp.), dunnage and wood crating, and pallets originating from various European countries (West Germany, Netherlands, Italy, Poland, Denmark, Finland, Sweden, Spain, France, Belgium and Portugal) and destined for a number of entry points in the United States (New York, Texas, Alabama, California, Delaware, Michigan, Louisiana, Georgia, Pennsylvania, Maryland, South Carolina, Illinois, Florida and Ohio).

Pityogenes bidentatus, known in the European literature as the two-toothed bark



Figs. 1–3. *Pityogenes bidentatus*. 1. Male elytral declivity. 2. Female elytral declivity. 3. Female head.

beetle, is widely distributed and common throughout northern and central Europe, USSR, and Great Britain. Its principal host is Scotch pine [*Pinus sylvestris* L.], but it will also attack other pines [*P. strobus* L., *P. mugo* Turra., *P. pinaster* Ait., *P. nigra* Arnold, *P. pithyusa* Steven, *P. pumila* (Pall.) Regel, *P. banksiana* Lamb., *P. cembra* L., *P. sibirica* Du Tour, and *P. sylvestris* var. *lapponica* Fries], spruces [*Picea abies* (L.) Karst., *P. obovata* Ledeb., *P. orientalis* (L.) Link.], firs [*Abies alba* Mill., *A. nordmanniana* (Stev.) Spach], larch [*Larix decidua* Mill.], Douglas-fir [*Pseudotsuga menziesii* (Mirb.) Franco], cypress [*Cupressus* spp.], arborvitae [*Thuja* spp.], and false-cypress [*Chamaecyparis lawsoniana* (A. Murr.) Parl.] (Munro, 1926; Pavlovskii, 1955; Browne, 1968; Schwenke, 1974).

Pityogenes bidentatus, a rather small (2.0–2.5 mm) and variable bark beetle, usually breeds in slash and in cut or fallen limbs and branches. Occasionally it can be an

important secondary pest in young conifer plantations, attacking trees damaged by frost. The species is polygamous. Longitudinal egg galleries are cut by the female in the cambium region, and radiate from a central nuptial chamber. Numerous larval mines radiate away from the egg galleries and terminate in pupal cells. Pupation occurs in the cambium, and young adults emerge from individual exit holes in the bark (Browne, 1968). There are 2 generations recorded in Europe (Grüne, 1979), with flight periods from May–June and July–August. Additional details of the biology and ecology of this species may be found in Eichhoff (1881), Escherich (1923), Balachowsky (1949), Chararas (1962) and Schwenke (1974).

In North America, 6 species of *Pityogenes* are known to occur (Wood, 1982), and all breed in the twigs and thin-barked limbs and branches of pine. Although most species of the genus prefer to breed in slash, or attack trees weakened by drought, transplanting, ground fires, or mechanical means, young, healthy pines or vigorous trees in heavily infested areas occasionally are attacked (Baker, 1972).

Adults of *Pityogenes bidentatus* differ from those of all other North American members of the genus by the following characters. In the male, the elytral declivity is armed by an upper pair of small, distinct spines adjacent to the suture and by a pair of large, hooklike teeth along the dorsolateral margin (Fig. 1). In the female, the frons lacks the large fossal excavation evident in the majority of the North American species, and is instead convex with a pair of small, bilateral indentations and a medial triangular area of dense, short pile (Fig. 3). Because of the unique combination of the armature of the male elytral declivity and the convex, unexcavated frons of the female, *P. bidentatus* does not trace to any species treated in the North American keys. To accommodate this newly detected European immigrant, couplets #1–4 of Wood’s (1982:650–651) key to the North and Central American species of *Pityogenes* should be modified, in part, and expanded as follows:

- 1. Male elytral declivity armed by three pairs of coarse denticles; female declivity rather gradual, armed by three pairs of denticles of about equal size and equally spaced; female fossa large, undivided; in 5-needle pines 2
- Male elytral declivity armed by at least one upper pair of large, hooklike teeth; female declivity rather steep, armed by three pairs of denticles with upper pair much smaller and much closer to second pair, or declivity without obvious pairs of denticles as in *bidentatus*; female fossa divided by median septum, except undivided in *carinulatus*, and absent in *meridianus* and *bidentatus* 3
- 2. (Couplet #2 unchanged)
- 3. Female frons devoid of fossal excavation 4
- Female frons with a conspicuous fossal excavation 5
- 4. Smaller species, 2.0–3.0 mm; female frons flat to convex 4a
- Larger species, 3.2–3.4 mm; female frons along median line on upper half shallowly concave; Mexico; *Pinus hartwegii* 4. *mexicanus* Wood
- 4a. Male elytral declivity with one pair of small, but distinct spines adjacent to suture above pair of large, hooklike teeth (Fig. 1); female declivity without conspicuous pairs of denticles (Fig. 2); New York (introduced from Europe); *Pinus leucodermis* and other conifers; 2.0–2.5 mm 8. *bidentatus* (Herbst)
- Male elytral declivity without pair of small spines above large, hooklike teeth; female declivity with three pairs of conspicuous denticles; North Carolina to Mississippi; *Pinus echinata*, *P. taeda*; 2.5–3.0 mm 3. *meridianus* Blackman
- 5. (Couplet #5 unchanged).

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